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THE JOURNAL OF GENERAL PHYSIOLOGY
AVENUE A AND 66TH STREET, NEW YORK, N. Y.

SCIENCE

VOL. LXIV NOVEMBER 12, 1926 No. 1663

CONTENTS

Hygiene as a World Force: DR. ANDREW BALFOUR 459

Arrangements for the Philadelphia Meeting of the American Association: DR. BURTON E. LIVINGSTON 466

Samuel Boardman Brown: PROFESSOR EARL R. SCHEFFEL 469

Scientific Events:

The Volcanic Eruption on the Island of Bali; Results of the Smithsonian-Chrysler Expedition to Africa; The Greenland Expedition of the American Museum; Grants from the Laura Spelman Rockefeller Memorial 469

Scientific Notes and News 471

University and Educational Notes 476

Discussion and Correspondence:

A Priceless Darwin Letter: DR. HENRY FAIRFIELD OSBORN. *Mammoth found in Loess of Washington:* O. W. FREEMAN. *A Correction:* PROFESSOR EDWIN B. WILSON 476

Quotations:

Dr. Welch's New Chair 478

Scientific Books:

Gager's General Botany: DR. JOHN M. COULTER 478

Special Articles:

The Factor of Age in the Chemical Stability of the Blood during Gestation: PROFESSOR WILLIAM DE B. MACNIDER. *The Magnetic Moment of Atomic Hydrogen:* T. E. PHIPPS AND J. B. TAYLOR 479

American Association for the Advancement of Science:

The Fall Meeting of the Executive Committee 481

Science News x

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKeen Cattell and published every Friday by

THE SCIENCE PRESS

Lancaster, Pa. Garrison, N. Y.

New York City: Grand Central Terminal.

Annual Subscription, $6.00. Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

Entered as second-class matter July 18, 1923, at the Post Office at Lancaster, Pa., under the Act of March 8, 1879.

HYGIENE AS A WORLD FORCE[1]

MY first and pleasing duty is to thank most heartily and sincerely the authorities of the Johns Hopkins University for the great honor they have done me in asking me to be present here to-day and to deliver an address upon such an auspicious and important occasion. It would have been very easy for them to find on this side of the Atlantic some one well fitted to perform the task and far more in touch with the great march of public health in the United States than I am; some one also with a more extensive knowledge of hygiene as now practiced and developed in countries with temperate climates, for many years of my working life were spent in a land where public health work was in its infancy. It is only since taking up residence in England, and especially since my association with that undertaking which, in large measures, owes its inception and progress to the beneficent generosity of the Rockefeller Foundation, that I have had opportunities of becoming intimately acquainted with those modern movements which have wrought so great a change in the domain of state medicine.

A study of hygiene in England, and particularly of the history of hygiene, has, however, shown me why, in all probability, those responsible desired to have a speaker from that country. England is undoubtedly the cradle of modern hygiene, that is to say, it was in England that the principles and practices of hygiene were first properly developed and placed on a sound administrative basis. Thus other nations have acquired the habit of looking upon England as a leader in the great campaign against disease and death. This habit, flattering to the old country, and the term "old country" includes Scotland, Ireland and Wales, was undoubtedly justifiable in the early days of public health, and I trust may still be looked upon as wise and salutary, even though the old country has now much to learn from other lands, more especially from this great and wealthy republic of the west. On the other side of the Atlantic we are perhaps a little apt to forget that, in the historic sense, America has public health traditions of considerable antiquity and that, if England is a cradle

[1] Address delivered at the fiftieth anniversary celebration of the Johns Hopkins University, at the exercises commemorating the opening of the new building of the School of Hygiene and Public Health, on October 22, 1926.

of hygiene, the United States is indubitably a baby's cot.

It could not well be otherwise.

Long ago New York was Dutch, and the stout burghers from Holland reached the New World with a tradition behind them, the great tradition of personal and domestic cleanliness. Many of you must have read Charles Reade's "The Cloister and the Hearth," that wonderful and classic picture of the Middle Ages. If so, you may remember this passage which he penned when describing the humble home of Eli and Catherine at Tergou:

> The Hollanders were always an original and leading people. They claim to have invented printing, oil-painting, liberty, banking, gardening, etc. Above all, years before my tale [and the date of his tale is the latter part of the fifteenth century] they invented cleanliness. So while the English gentry, in velvet jerkins and chicken-toed shoes, trode floors of stale rushes, foul receptacle of bones, decomposing morsels, spittle, dogs' eggs and all abominations, this hosier's sitting-room at Tergou was floored with Dutch tiles, so highly glazed and constantly washed that you could eat off them.

The Dutch who settled in New York doubtless practiced those habits of cleanliness in which they had been reared and their influence can not have wholly vanished even when New York, foul, crowded and unhealthy, had become "The City that Was," so graphically portrayed by Dr. Stephen Smith. The leaven of the Dutch, however, did not suffice to leaven the whole mass, that polyglot and heterogeneous mass of people who made a great part of the island city a veritable fever nest. Personal cleanliness and cleanliness of the home meant much, but hygiene became a living force only when it extended from the individual to the community, from the home to the municipality, when it became an affair of government, both local and central, and when the aid and majesty of the law were invoked on its behalf. Strange to say, of late years the pendulum has swung back in the old direction and environment, at one time all-important, is now seen in its proper perspective while the health of the individual from the stage of the embryo to that of old age has become a matter of primary importance to the state and to all who have the well-being of mankind at heart. Public health, as well defined by Professor Winslow, of Yale, is "the science and the art of preventing disease, prolonging life and promoting physical health and efficiency through organized community efforts for the sanitation of the environment, the control of community infections, the education of the individual in principles of personal hygiene, the organization of medical and nursing service for the early diagnosis and preventive treatment of disease, and the development of the social machinery which will ensure to every individual in the community a standard of living adequate for the maintenance of health." To-day, however, in the brief space available, I wish to consider another aspect of hygiene, its rôle as a world force, as one of the great factors which have influenced human life and activity and as possibly the greatest factor which will influence man's progress in the future. To do so, it is necessary to institute a few comparisons. Let us then consider very shortly those forces which have moulded man.

We need, I think, say little about the elemental passions, about love and hate, even though both have exercised a profound influence on the world's history. There have been great loves, like that of Caesar and of Anthony for Cleopatra, which have changed that history, for, as Byron has it,

> What lost a world and bade a hero fly?
> The timid tear in Cleopatra's eye,

but for the 'οι πολλοι it is possible that the influence of the mischievous god, Cupid, is best expressed in the homely Scottish couplet:

> Love, love, love, it is a dizziness,
> It winna let a plain body gang aboot his business.

Yet Cupid's arrow misses not a few, and other forms of affection give men, women, ay and even children, the go-by, while hygiene is all-embracing. Even when the world was young the cave-woman, probably as a result of fear rather than of love, cleared the cave-man's cave of bones and debris; the ruins of the most ancient civilizations have their midden heaps; there are certain hygienic activities common to every age and clime.

Hate has changed the world's destinies most surely when it has been a case of "Cry Havoc! and let slip the dogs of war." It is in the form of war that hate is best contrasted with hygiene, for, as will be shown, the latter is a power for peace, perhaps the greatest power of the present day. Greed, vanity and ambition have played a part in moulding the destinies of man. We recall Lot's fatal choice and all that came of it, but it is desirable to contrast great things with great and so, without more ado, let us compare hygiene and religion.

The delicacy of this exercise is apparent, particularly in a country like the United States, which, though it be a birthplace of new creeds, is very especially the home of the old Christian orthodoxy. Let us, however, in the first place be quite clear in our minds as to what we mean by the term "religion." There is indubitably a religion in the abstract, as it were, religion, once defined to me by a leading scientist with a reverent mind as "a system of conduct

colored by emotion." If this be admitted, it is evident that it would be useless to try and contrast its effects on mankind with those of hygiene. The two are inextricably mingled. Indeed, to employ another of the scientist's definitions, "hygiene is a system of scientific conduct colored by the emotion of love." Note how the expressions approximate. Presumably the inspiration responsible for the evolution of each was and is derived from the same source, whatever that source may be. While this view will presumably find favor, except in the case of the stern materialist, we must, I think, guard against subscribing to a statement sometimes made: "You can not fittingly or justly compare hygiene and religion. The one deals with the physical, the other with the spiritual side of man." I venture to think that such an argument is not valid. Even the spiritualists know little of the soul, but, presumably, intangible though it be, it is associated in some way with the mind and the activities of the higher nervous centers. Now there is a hygiene of the mind as well as of the body. Indeed, we are only now realizing the immense importance of this mental hygiene. It is true that great souls have lived in feeble and diseased bodies, but in such cases we have to ask ourselves if these souls might not have been yet greater had their fleshly tenements been sound. Possibly not, for suffering may refine and elevate but, after all, we have to deal with the common run of men and women, and there can be no doubt that bodily and mental health should go together and that hygiene, to be wholly successful, must take stock of the nebulous functions of the golden bowl as well as of the physical state of the silver cord, the windows, the grinders, the pitcher at the fountain, the wheel at the cistern, and all that goes to make up the earthly habitation of the spirit of man. It is at least possible that the fine spirit displayed in Great Britain at the time of the great strike was largely due to the fact that, taken as a whole, the population was healthy in mind and body. The sick baby is fretful and peevish, and a nation with a large proportion of chronic invalids is unlikely to face a crisis with equanimity or exhibit that patience and good nature which were such marked features during the recent upset.

While, as indicated, any general comparison of religion in the abstract with hygiene also in the abstract would serve no good purpose and would, in fact, be a work of supererogation, I can not, if I am to consider my subject fully and faithfully, refrain from contrasting the influence of applied hygiene with that of the application of religious principles in human life and work; in other words, with organized religion, whether such takes the form of Christianity, Judaism, Mohammedanism, Buddhism, the faith of Confucius or any of the other creeds which have helped man along the thorny path of existence and guided him, in some measure, through its trials and difficulties. The practice of these beliefs has, of course, had a profound influence upon the world. Reverting, however, for a moment to the original idea of religion, an instinct which, like that of hygiene, has, as Sir Arthur Keith put it the other day, been implanted in man at some stage of his evolution, I think it possible that the hygiene instinct, apparent in some animals be it noted, preceded the religious instinct and that, even at the present time, the influence of the former is more universal. There are many to whom religion makes no appeal, there are a few races of mankind which appear to be wholly devoid of any religious instinct, but even the most primitive, the most debased, practise certain laws of health. These are essential for life and procreation, and the two ideas which dominate every type of man are those which control the animal world of which he is a part: love of life and the desire for reproduction.

Turning again to our main theme, religion as applied by man with all his faults and foibles and the science of hygiene as similarly applied, it is instructive to note that some forms of religion had, and still have, a hygienic basis. Rites of purity and certain forms of exercise are, to this day, closely associated with religious observances. Both Moses and Mahomet were hygienists of no mean order. The best features of some faiths are those which relate to the care of the body and the prevention of disease. In India the great system of caste following the institutes of Vishnu and the code of Manu brought the teeming millions of the peninsula some measure of sanitary salvation, while the creeds themselves did little to raise or elevate the masses.

Most of the great religions have been productive of wars and strife. Did not the Founder of Christianity declare that He came to bring a sword rather than peace into the world, and has not history, time and again, confirmed the truth of this prophecy? He foresaw how far short of His precepts His disciples would fall.

In the hands of man religion, playing the part of a world force, has unhappily often produced turmoil and bloodshed. On the other hand, hygiene as a world force is, as I have said, a power for peace. Health and its promotion are subjects which sensible men—I say sensible, for we must exclude cranks—can discuss without acerbity and bitterness. I venture to think that the health section of the League of Nations is likely to prove the most constructive and most successful part of the great Geneva organization designed to precipitate the millennium. The green-eyed monster

is apt to obtrude itself into most human affairs, but, in the case of public health work and propaganda, jealousy takes the form of a healthy rivalry. You may envy your neighbor's health record, but there is no sense in being jealous of him because his infantile mortality rate is much lower than yours. The revelation merely stimulates you to further effort, and it is almost inconceivable that nations should go to war in the race to be the fittest, as they do when it is a question of riches or power or *amour propre* or (in the old days) religion or self-defense. Yet curiously enough this fitness brings wealth and perhaps power with it and is a very excellent form of self-protection. I am quite sure that, if the International Health Board of the Rockefeller Foundation had not the word "health" in its title, its manifold activities would never have been received with complacency and gratitude by countries not owing allegiance to the Stars and Stripes. That word "health" is a talisman which can successfully unlock many a foreign door.

It is true that, in certain directions, organized religion has played a part comparable to that of hygiene in moulding man's destinies, though it is also true that at times it has been the bitter foe of progress and enlightenment.

Taking Christianity, we know that, throughout the dark Middle Ages, it here and there kept alight the torch of knowledge. We recall the stimulus to thought and inquiry engendered by the Reformation in Europe, but, as a rule, when it has signally influenced progress, the effect has been due rather to a spiritual movement as, for example, the awakening of a spirit of sympathy with the sick and, as Dr. Welch has pointed out, the development of that new humanity which paved the way for the work of the sanitary reformers in England, rather than any deliberate campaign by a religious body. Religious organizations were in being in various parts of the world for many hundreds or thousands of years without any serious attention being paid towards the betterment of life and working conditions, the curse of slavery and the slave trade, the great question of maternity and child welfare, the prevention and cure of venereal disorders along rational lines, the safeguarding of food, and all those activities with which we are to-day familiar, in which fortunately some organized religions now participate.

It is true, as already stated, that Judaism, the creed of Mahomet and certain other faiths did lay stress on the practice of preventive medicine, but it seems to me that none can equal in this or other fields what hygiene has accomplished in a remarkably short space of time, achievements which have wrought amazing changes in many parts of the globe and brought about a veritable revolution. It is too much to expect that organized religion could conquer disease. That is not its province. The ancient faith of China did nothing to alleviate the myriad plagues of that vast territory; all the creeds of India, amongst them Buddhism, which possesses much that is attractive, failed to show how cholera could be mastered and malaria subdued. Christianity, with all its virtues, for hundreds of years coexisted with a great burden of communicable maladies. It was not until, in the fullness of time, scientific knowledge was applied to the prevention of disease that we gained our freedom from the fear of smallpox and of typhus and that you Americans were able to sweep yellow fever out of the New World. And yet it is hardly worth while pursuing this intricate, if interesting, argument, for it must be evident that hygiene has become a world force of the first magnitude, because it is, in very truth, a form of religion itself.

The old, wise Greeks knew what they were about when they worshipped the goddess Hygeia and made her votive offerings. I am inclined to think that in some countries, such as India, hygiene will never exercise its full sway unless it comes to the people in the form of a religion, a new revelation to save and succor a vast multitude, the prey of superstition and disease. I believe that to-day you are opening and consecrating not a school only but a temple, a shrine with infinite possibilities.

It is interesting, if somewhat saddening, to think that, leaving the ancients out of the question and pioneers like Mead and Jenner, the credit for initiating the campaign which has had such remarkable results is due neither to the votaries of religion nor those of medicine, for it was a layman and a lawyer, Edwin Chadwick, a pupil of the philosopher, Jeremy Bentham, who, as Sir William Collins said, had visions of a time when "doctors would be unable to live, yet perhaps unable to die," and who devoted all his time and gifts and energies to the realization of this ideal. Similarly, in the United States it was Lemuel Shattuck, who was neither a divine nor a physician, but a student of social problems, who played the part of a pioneer.

There are, I think, three other factors which may be termed world forces, and with which hygiene may, nay must, be compared. These are the pursuit of pleasure, the pursuit of wealth and the pursuit of knowledge. All these, though in very different ways, have exerted a great influence on man and his affairs. No one, however, would place either the pursuit of pleasure or the pursuit of wealth in the same class with hygiene as a controlling force in human destiny. In the one case there come to the mind the famous picture of the gay and giddy throng pursuing gaily

the flower-wreathed figure of an elusive female and the verse of Scotland's greatest poet:

> But pleasures are like poppies spread,
> You seize the flower, the bloom is shed.

And in the other we recall Goldsmith's lines:

> Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay.

The influence of both these pursuits is evanescent compared with that of hygiene and too often is not in the direction of progress and true comfort.

The pursuit of knowledge is in a different category. It has been a great and cardinal force and might well contend with hygiene as a benefactor of mankind were it not that the art and science of hygiene have arisen from this pursuit and that hygiene, being the application of knowledge to man's needs, has outstripped it. The pursuit of food, at the call of hunger, has from the beginning been a world force, but, inasmuch as it is, in certain directions, a hygienic activity, it need scarcely come into our comparative list.

Sufficient has, perhaps, been said to indicate how wide and far-reaching is the sovereignty of hygiene, a dominion to which the limits have not yet been set and which will undoubtedly make its presence felt in many countries where to-day man grovels in filth and is a prey to pestilence, the while it extends and strengthens its position in those lands where its future is assured. As one of your writers has well said, "throughout the tangled web of our civilization, the threads of sanitary science run in increasing numbers."

And now let us see how, at the present time, hygiene acts as a world force. It does so in various ways. One is by the great system of quarantine, with its stations scattered over the globe and its control of ships and shipping. In the light of what I said previously, it is surely of interest to note that the first quarantine act was passed by the General Assembly of Pennsylvania in 1700 and was quaintly entitled "An Act to Prevent Sickly Vessels coming into this Government." Hygiene has always had a close association with the sea and ships. It has abolished two great sea scourges, scurvy and ship beriberi; it has radically changed life afloat, so far as navies are concerned; and now, at long last, it has commenced to take the merchant seaman under its wing. In this respect I must sorrowfully confess that the American mercantile marine is ahead of that of Great Britain. Speaking generally, you house and feed your sailors better than we do. This is a reproach we, an old seafaring nation, are now taking steps to wipe out, and if only the control can pass from the board of trade to the ministry of health, much may be accomplished. Let us hope so. No finer man exists than the British sailor, and he deserves well of his country and merits a consideration which in the past he has not received.

Most unprejudiced persons will, I think, admit that, taken all in all, the British empire has been a power for good in the world. At any rate, it helped to create the United States of America, and that is something to its credit! At the same time, its sons, throughout the long years, have done much to make hygiene a world force. The traditions of the homeland have been carried overseas, and some of the great dominions, favored perhaps by local conditions, have, in certain directions, progressed further than the mother country. New Zealand has the lowest infantile mortality in the world; Australia has probably the most complete and best organized quarantine system on the face of the globe; South Africa has done more to prevent and stamp out disease amongst miners than has any other land; Canada, closely in touch with the vast public health developments in the United States, has in some ways more than held its own. For example, I believe the milk supply of Toronto, under the fostering care of Dr. Charles Hastings, will compare favorably with that of any other city. The Indian empire, with its fine record of research in tropical medicine and hygiene, a record reaching back more than a century and containing the crowning triumph of Sir Ronald Ross, based on the reasoning of Sir Patrick Manson, has, it is true, failed to apply, as it might have done, all the lessons that research has taught, but its task is a stupendous one. It is something to have furnished great cities like Calcutta and Bombay with active sanitary organizations, to hold cholera in check, to grapple successfully with leprosy, to indicate the method whereby kala-azar may be controlled, to rob enteric fever of its terrors, to alter the whole outlook as regards amoebic dysentery and liver abscess, to cope manfully with the grim specter of famine. In Malaya Sir Malcolm Watson and others have accomplished a great work in reducing malaria and rendering estate labor healthy. Hong-Kong has changed from a pestiferous hole to a comparatively healthy seaport. Singapore and Colombo have carried out important sewage and water works and taken elaborate steps to guard themselves against imported infection. In Palestine a veritable revolution has been effected since the war, and there is not a single branch of the huge subject of public health which has not received some attention there at the hands of a small but devoted band of workers.

As a member of the Advisory Medical and Sanitary Committee at the Colonial Office, I am kept in touch with public health developments in all parts of Bri-

tain's far-flung possessions, and with none more than tropical Africa. The east coast of the Dark Continent from Uganda and Kenya in the north to the Rhodesias in the south has been the scene of active operations, and I would cite especially the campaign against syphilis in Uganda, that against yaws in Kenya, the war on the tsetse fly which is being waged in Tanganyika, and the determined attack on malaria and blackwater fever in Southern Rhodesia. On the West Coast, once the white man's grave, a great change has taken place and, though there is much yet to be accomplished, notably in the case of yellow fever, where valuable help is at present being rendered by American experts, life is now very different, both for the white man and the black, all the way from the Gambia to Southern Nigeria, than it was when that intrepid woman, Mary Kingsley, sent out her clarion call for action. There remains the Anglo-Egyptian Sudan, a greatly changed territory now to what it was in the days of the Mahdi and the Khalifa, when disease contended with the sword, the spear and the kurbash, to destroy life and render the natives wretched and hopeless.

Turning to the New World, the British record is not so good, but we can point with some satisfaction to important advances in British Guiana and with a reasonable pride to what has been done in Port of Spain, while here and there elsewhere the torch of hygiene has been kept alight even if it glows but dully.

France, ever to the fore in questions scientific, has greatly ameliorated conditions in the vast territories under the tricolor. Her work on malaria in northern Africa has been remarkable; in French equatoria sleeping sickness has been relentlessly pursued; in Madagascar plague has been combated to good effect, while in French Indo-China much has been done in the way of safeguarding the public health. The Dutch, with a passion for cleanliness bred in their bones, have displayed qualities of great thoroughness and persistence in coping with difficult situations in Java and Sumatra. The way they have tackled plague is an example for other countries to follow, they have solved important problems relating to the manufacture of vaccine lymph in the tropics and, recognizing that hygiene pays and pays handsomely, they have spent great sums in improving the housing and living conditions of the coolies on their fine rubber and cinchona estates. In their curious little West Indian Island, Curaçao, I once spent quite a long time trying to find a dirty place. I discovered one at last hard by a Negro cabin but, in some other colonies I know, it would have been accounted a comparatively cleanly spot!

The Germans have been shorn of their overseas possessions, but German influence and work continue to keep hygiene a world force and to increase its efficiency, more especially perhaps by shedding fresh light on the various sciences upon which hygiene and sanitation are securely based. Belgium is busy, both at home, where her campaign against venereal diseases attracts special attention, and in that vast Congo region, so long inaccessible and full of terror for the white man; now a country where much scientific work is being carried out on preventive lines, notably in the case of sleeping sickness and tuberculosis. Italy, where the renaissance of learning had its birth, has contributed greatly towards the common cause. The early work there on malaria has had its repercussion in many parts of the world and, in such colonies as she possesses, Italy does not forget Emerson's maxim, "The first wealth is health." Other examples from the Old World might be cited, for the activities of Japan have not been confined to the Archipelago of the Far East, and Japan can certainly claim a place in disseminating the principles and practice of hygiene, but it is time to cross the Atlantic or Pacific and see where America stands.

I said little in the way of comparing war and hygiene. In many respects they are as the poles apart, but let it not be forgotten that war has its constructive as well as its destructive side. There is no doubt hygiene is the greater and more beneficent force, but some of the most valuable advances in hygiene may be traced to war. Consider how campaign after campaign in Europe combined to give us the wisdom of that great army physician, Sir John Pringle.

Moreover, it was war, war with Spain, which led the United States to spread abroad the knowledge and experience of public health measures it had gained and garnered since the days of Shattuck, to plunge abroad into research with a view to prevention, to embark upon a policy which has had far-reaching results. Reed and his colleagues in Cuba penetrated the mystery which had shrouded yellow fever for centuries and Gorgas applied the new knowledge. In the Philippines and Porto Rico a hopeful gospel was preached and hygiene became a factor of paramount importance. Then followed Panama with all its wonders and triumphs and now the good work has been extended to Haiti.

With a few exceptions, all the cases I have cited are examples of countries busy in their own possessions, sometimes forced by circumstances to support the cause of hygiene, sometimes wise enough to see that such support is profitable, sometimes no doubt influenced by feelings of compassion and a desire to do the right thing.

But hygiene has been given an opportunity of showing itself as a world force in quite another manner,

and this is perhaps the most startling and interesting and impressive development mankind has ever witnessed. Never before has altruism played such a part in hygienic progress, for never before has colossal wealth been turned to so beneficent an object. When John D. Rockefeller placed his millions at the disposal of the International Health Board of the Foundation bearing his name he made that board a power for good, a world power with amazing possibilities before it. Some of the possibilities have already been realized. Yellow fever, the scourge of tropical America and one which formerly took terrible toll on your eastern and southern seaboard, has been well-nigh exterminated. It has also been attacked in West Africa and there is more than a reasonable hope that in the next few years it will be as extinct as the dodo. Think what this means! A most malignant and widespread disease which used to cause thousands upon thousands of deaths, occasioned untold sorrow and misery and a vast loss of money and time, stamped out of the world —possibly forever. Even if it is not blotted out forever, it has been so reduced and controlled as no longer to be an international danger. What an achievement, especially when one considers that it is other countries, not the United States, which have chiefly benefited! Again, take the hookworm campaigns set on foot in various parts of the globe; not so dramatic as the yellow fever work, but far more extensive. The war on the ankylostome has already worked wonders in certain places and, if only properly followed up, will make an enormous difference to labor in the tropics and incidentally will greatly diminish the evils of soil pollution. I have no time to tell you of all the other ways in which the International Health Board is proving hygiene to be a world force of the first magnitude. Is the story, I might say the romance, not told in its annual reports and in countless reports in various languages issued by governments and institutions which have experienced the touch of the magic wand? Were I to enlarge upon the subject I should call attention to another international organization which has been aided by the Rockefeller Foundation and which is also demonstrating in a remarkable manner how hygiene may sway the destinies of nations and be a power for peace. Need I say that I refer to the health organization of the League of Nations, the health section of which, under the guidance of its restless, enterprising and far-seeing medical director, Dr. Ludwik Rajchman, is becoming a friendly, if comparatively humble, rival of the International Health Board and is extending its activities far and wide. The parent organization is now a very important body which certainly looks upon hygiene from the widest aspect and seeks to increase its scope and intensify its undertakings. This it does by means of its advisory council, represented by the Permanent Committee of the Office Internationale d'Hygiène Publique at Paris, a committee on which both Great Britain and the United States are represented, its health committee with its various commissions, and its health section, to which I have just alluded. When one looks through the long list of their activities comprising education, work on malaria and cancer, inquiries into tuberculosis, smallpox, anthrax and African sleeping sickness, the standardization of sera and other products, an opium commission and a commission for the Far East, one recognizes not only how much is being done, but how much has yet to be accomplished.

We are reminded of this by what took place not so long ago at the Infant Welfare Center of Kuala Lumpur in the Federated Malay States, where they are very particular in impressing upon the mothers the necessity of giving their babies a daily bath. The mothers are usually recalcitrant. They don't like undressing the infants, and above all they will not remove charms with which they are usually bedecked. Enter a Chinese mother with a fine but dirty babe. She was persuaded to remove the clothes but not a charm the child was wearing, for she maintained that this charm, which had been hung round the baby's neck by a neighbor, had saved its life when it was sick unto death. On examination the charm proved to be a dog license, bearing the inscription "1915. Selangor, one dog 1,669."

Surely, however, the outlook is hopeful with powerful organizations on either side of the Atlantic exemplifying a new spirit of international cooperation and control!

I would conclude by conjuring up a few concrete examples of how hygiene, by benefiting the human race, is fit to rank with, and in some ways above, all those other powers which have determined and still determine the fate of mankind. In the Bible story one record which appeals to all, which never fails of its effect, is that which recounts how the blind received their sight. There is something in the helplessness of the blind, in their sad and hopeless lot which must excite compassion. I wonder if you know a poem by Alfred Noyes entitled "Spring and the Blind Children," written after he had seen a school of blind children on a country walk. Here are two verses from it:

> They passed the primrose glistening in its dew,
> With empty hands they drifted down the lane,
> As though, for them, the Spring held nothing new;
> And not one face was turned to look again.
>
> Like tiny ghosts along their woodland aisle
> They stole. They did not leap or dance or run,
> Only at times without a word or smile
> Their small blind faces lifted to the sun.

Is it not pitiable, and yet it is far more pitiable to think that the great majority of blind children need never be blind, and it is a fine and glorious thing to think that, at the present moment, preventive medicine is warding off blindness in thousands of cases. Ophthalmia neonatorum, the blindness of the newborn, can be easily guarded against, that of measles, which it would seem is by no means negligible, can be and should be prevented, as indeed can measles itself. In Egypt and in China, lands of flies and filth, devoted disciples of Hygeia are combating trachoma and other conditions leading to loss of sight. Yet listen to this poignant passage from a paper by Major W. R. Dear, of the Medical Corps of the United States Army, on trachoma in Russia:

> What of the thousands and thousands of untreated trachomatous Chouvashes in their poverty-stricken little autonomous Soviet Republic along the south bank of the Volga!
>
> They are there: neglected, untreated, blundering along the dusty roads of Summer, blinking at the dazzling whiteness of the glittering snowy plains in Winter, or sitting patiently on the door-step of the log-houses called home, and waiting—for what?—for the disease, trachoma, to gallop along its fiery path, searing, scarring and occluding until the course is run. And the world civilization as we know it, in this enlightened twentieth century, with its developed altruistic and humanitarian elements, will, because of certain fundamental differences of opinion between the Soviet Government and other nations, permit those thousands upon thousands to pass from the sunshine of life into the twilight of dim vision, and on into the deep blackness and despair of total blindness.

Is not that a ghastly picture, and is it not better to prevent blindness than to try and cure it, especially when we know that in most cases it can not be cured, for the age of miracles is past?

And yet is it? Think of what sunlight and artificial sunlight have done for miserable children, riddled with or deformed by tubercle, consider all that proper feeding can accomplish in rickets, remember how malaria, yellow fever, dengue and filariasis can now be met and mastered in terms of the mosquito. Reflect upon the way death-rates have come tumbling down and general morbidity rates have fallen. Recall the fact that in 1855 the expectancy of life in the U. S. A. at birth was forty years, while now it is fifty-eight.

And so on and so forth. It would take hours to recount the triumphs of hygiene, but, viewing them all, render thanks in this country to men like Shattuck, Sedgwick and Herman Biggs; Trudeau, Reed, Gorgas and Carter, who have passed away; Chapin, Edsall, Rosenau, Vaughan, Howell, Vincent, Russell and, most beloved of all and the best known, William Welch, who happily are still with you, along with many others too numerous to mention who have fought the good fight and seen the works of their hands established upon them.

And what of the future? These men had not the facilities you are providing for the students of to-day. They had no schools of hygiene. In large measure they had to learn the lesson in that best of all schools, the school of experience. Yet it can not be doubted that your young men will now start upon their careers better equipped than were their predecessors. Their enthusiasm can be aroused, their imaginations quickened by what they hear and do in this new school at Baltimore, and the very sight of a magnificent building devoted wholly to the teaching of preventive medicine should impress upon them the importance of safeguarding the public health, should convince them that hygiene is indeed a world force. Let us hope that with such an Alma Mater the men of the future will emulate, and not only emulate, but surpass those who have led the way. The Johns Hopkins University has a splendid record of fifty years of effort, while not less notable is the record of its School of Medicine and of the hospital covering three to four decades, much of it under the inspiration of the revered Osler, for the good of humanity and the advancement of medical science. When another fifty years have passed, there can be no doubt that the school whose opening you are commemorating to-day and dedicating to Hygeia will also possess a record of which it can be proud, which will redound to the credit of those who guided its early destinies, and, what is far better, will demonstrate conclusively the power of modern and scientific hygiene in the prevention of sickness and death and in the alleviation of many of the sorrows of mankind.

Andrew Balfour

London School of Hygiene
and Tropical Medicine

ARRANGEMENTS FOR THE PHILADELPHIA MEETING OF THE AMERICAN ASSOCIATION

Hotel Arrangements

At the approaching fifth Philadelphia meeting, which will occur at the University of Pennsylvania, from December 27, 1926, to January 1, 1927, the Bellevue-Stratford Hotel, one of the finest hotels in Philadelphia, will be general headquarters and many of the officers of the association, as well as others, will have rooms at that place. The numerous scientific societies that are meeting with the association this year will in many cases have their own headquarters

PHILADELPHIA HOTELS AND THEIR RATES

Name and address	No. of rooms	Room rates per day: Single, Without Bath	Single, With Bath	Double, Without Bath	Double, With Bath	Suites: Parlor, Bedroom and bath
Adelphia Thirteenth and Chestnut	400	.....	$4 upward	.....	$7 upward	.....
Bartram Thirty-third and Chestnut	210	$2.50	$3.50 to $4	$4	$6	$10 to $12
Belgravia 1811 Chestnut	182	.....	$5 upward	.....	$7 upward	.....
Belle-Claire Fortieth and Girard	100	.....	.....	.....	$5 to $10	.....
Bellevue-Stratford (General Headquarters) Broad and Walnut	750	$4 to $6	$5 to $8	$6 to $8	$7 to $14	$20 to $30
Benjamin Franklin Chestnut and Ninth	1,200	.....	$4 to $7	.....	$7 to $10	$14 to $30
Claridge 1334 Walnut	60	$2 upward	$3.50 upward	$3.50 upward	$4 upward	$8 upward
Devon Park (American Plan) Devon, Pa.	140	*$5 to $9	$8 to $12	*$12 to $15	$16 to $24	$18 to $28
The Elks Broad and Vine	210	.....	$5 to $6	.....	$8 to $12	.....
Esmond Twelfth and Spruce	75	.....	$4 upward	.....	$6 to $10	$15 to $20
Ferguson Hotel Girard Ave and 16th	150	.....	$2 to $3.50	.....	$3.50 to $6	$5 to $8.50
Gladstone Hotel Eleventh and Pine	300	$3 to $4	$5	$5 to $8	$6 to $10	.....
Green's Hotel Eighth and Chestnut	320	*$2.50	$3.50 to $4	*$3.50 to $5	$5 to $6	.....
Green Hill Farms City Line and Lancaster Pike	150	.....	$7 to $8	.....	$8 to $14	$16 to $18
Lafayette Hotel 1339 Arch	100	*$3 to $5	$5 to $8	$4 to $8	$6 to $10	.....
Lorraine Hotel Broad and Fairmount	200	*$4 to $6	$5 to $9	$6 to $8	$9 to $12	$20 to $30
Majestic Broad and Girard	200	$2.50 to $3	$4 to $6	$4 to $5	$6 to $12	$12 to $18
Maidstone 1327 Spruce	200	.....	.....	.....	.....	$8 to $28
Normandie Thirty-sixth and Chestnut	234	.....	.....	$4	$5 to $6	.....
Pennsylvania Thirty-ninth and Chestnut	600	*$2.50 to $3	$3.50 to $6	*$4 to $5	$5 to $10	.....
Reading Hotel Twelfth and Market	75	$2 to $3	$3 to $3.50	$4 to $4.50	$5 to $6	.....
Rittenhouse Twenty-second and Chestnut	200	.....	.....	.....	$10	$24
Ritz-Carlton Broad and Walnut	161	.....	$6 to $8	.....	$10 to $15	$20 to $30
Robert Morris Seventeenth and Arch	208	.....	$3.50 to $5	.....	$5 to $10	.....
Ruric Hotel 139 North Sixteenth	100	.....	*$4	.....	*$5 to $7	.....
Spruce Hotel Thirteenth and Spruce	220	$2.50 to $4	$3 to $5	$5 to $6	$5 to $10	$10 to $20
Stenton Hotel N. E. Cor. Broad and Spruce	50	$3.50	$5	$6	$8	$15
Sylvania Hotel Juniper and Locust	400	.....	$4 upward	.....	$8 upward	$15 upward
Thomas Jefferson 1816 Arch	100	$3 to $5	$5 to $8	$4 to $8	$6 to $10	.....
Vendig Hotel Thirteenth and Filbert	216	.....	$3.50 to $5	.....	$6 to $8	.....
Walnut 208 South Eighth	134	*$2 to $2.50	$3 to $3.50	*$3 to $3.50	$4 to $5	$10
Walton Hotel Broad and Locust	350	$3 to $4	$3.50 to $5	$5 to $6	$6 to $8	$12 to $16
St. James	350	$3	$3.50 to $4	$4 to $8	$5, $6, $8	$10, $12, $14

An asterisk denotes running water. The above rates are on the European plan. Some of the hotels listed offer an American-plan rate which will be furnished on application.

at other hotels. The society headquarters hotels have not yet been decided on and the list of these can not be published until later. Those who plan to attend the meeting should arrange for their hotel accommodations as soon as possible, addressing the hotel management in each case. The accompanying list of Philadelphia hotels and their rates has been supplied by the local committee on arrangements.

THE LOCAL COMMITTEE FOR THE MEETING

The members of the local committee on arrangements for the fifth Philadelphia meeting are shown in the following list, as far as appointments have been made.

C. E. McClung, General Chairman.
Samuel W. Fernberger, Secretary.
W. H. DuBarry.
G. H. Hallett.
G. E. Nitzsche.
Reese James.
W. T. Taggart.
Thomas Hart.
Arthur W. Goodspeed (representing the American Philosophical Society).
T. Chalkley Palmer (representing the Philadelphia Academy of Natural Sciences).
Howard McClenahan (representing the Franklin Institute).

The names of the subcommittees of the local committee and their chairmen are shown below.

Finance: W. H. DuBarry.
Meeting Places: G. H. Hallett.
Hotels and Housing: G. E. Nitzsche.
Publicity: Reese James.
Exhibition: W. T. Taggart.
Transportation: Thomas Hart.
Entertainment: G. E. Nitzsche.

The local representatives for sections of the association, who are also local representatives for the scientific societies of their respective sections, are as follows:

Section A (Mathematics). George G. Chambers.
Section B (Physics). Arthur W. Goodspeed.
Section C (Chemistry). Walter T. Taggart.
Section D (Astronomy). Samuel G. Barton.
Section E (Geology and Geography). Frederick Ehrenfeld.
Section F (Zoological Sciences). D. H. Wenrich.
Section G (Botanical Sciences). Rodney H. True.
Section H (Anthropology). Frank G. Speck.
Section I (Psychology). Edwin B. Twitmyer.
Section K (Social and Economic Sciences). James P. Lichtenberger.
Section L (Historical and Philological Sciences). Arthur C. Howland.
Section M (Engineering). Robert H. Fernald.
Section N (Medical Sciences). Wm. Pepper.
Section O (Agriculture). John W. Harshberger.
Section Q (Education). James C. Miller.

All correspondence for the local committee or any of its members, concerning local arrangements for the meeting, should be addressed to the general chairman, Dr. C. E. McClung, Zoological Building, University of Pennsylvania, Philadelphia. Local representatives for sections may be addressed individually at the University of Pennsylvania.

RAILWAY RATES AND CERTIFICATE VALIDATION AT PHILADELPHIA

The usual reduced railway rates have been secured from the regional passenger associations. The certificate plan will again apply for the United States and for eastern Canada. Persons going to the meeting, whether members of the association or not, should purchase one-way tickets, securing a certificate for the American Association for the Advancement of Science and Associated Societies. (A receipt is not what is needed.) After validation at the meeting the certificate will entitle the bearer to purchase a return ticket at half the regular fare.

Those in attendance should register as soon as possible after they arrive in Philadelphia. The registration offices will be in Weightman Hall, at 33rd and Spruce Streets, which is the gymnasium of the University of Pennsylvania. In the same hall will be held the general science exhibition, which will be this year more attractive than ever before.

A registration fee of one dollar is to be paid upon registration, the funds thus collected being used to help defray some of the expenses of the meeting. Registration will entitle a person to the official badge for the meeting, a copy of the general program and other literature pertaining to the meeting, and the validation of one railway certificate. *It should be noted, however, that the registration fee will be remitted, if so desired, to life members of the American Association for the Advancement of Science and also to annual members who are not in arrears to the American Association, that is, whose dues for the current year (due last October 1) have already been paid.* Those holding railway certificates should deposit them at the validation desk as soon as they have registered, to be called for later in the meeting.

BURTON E. LIVINGSTON,
Permanent Secretary.

SAMUEL BOARDMAN BROWN

PRACTICALLY on the eve of the new school year, Professor Samuel Boardman Brown, head of the department of geology and mineralogy, West Virginia University, was stricken with cerebral hemorrhage the afternoon of September 18, 1926.

Professor Brown was possibly the best known instructor at West Virginia University. Graduating from this school in 1883 with the A.B. degree, and in 1886 with the M.A. degree, he became connected with his alma mater as assistant in geology in 1890, he was promoted to professor in charge in 1892, and served continuously for thirty-four years and to the time of his death in this capacity. Thousands of his former students are to be found over the state and country. Several geologists of high rank are included in the number.

Born on March 5, 1860, in Preston County, W. Va., a son of Granville and Elizabeth (Watson) Brown, he received his preparatory education in the local schools. Following his graduation at West Virginia University, he was in charge of a private school at Martinsburg, West Virginia, for two years. In 1885 he was elected principal of the Glenville (W. Va.) State Normal School, a position held until his return to his mother college in 1890.

Much of the geological equipment at West Virginia University was collected or bought privately by Professor Brown. This material, together with a set of mounted animals and birds prepared or purchased by him, has been given to the university by him or by his family, and will serve as a continual memorial to his interest in science. The mounted specimens will be placed in the museum of the zoological department.

Professor Brown was one of the committee on the organization of the West Virginia University Scientific Association, and the second president of this association, 1915–16, a member of the Monongalia Historical Society and other organizations. He refused at least one distinction usually much desired. For many years and to the time of his death he was a member of the American Association for the Advancement of Science.

Few of his colleagues realized his contribution to scientific work. He was an early and vigorous advocate of a West Virginia Geological Survey against strong opposition. This opposition later disappeared, and a survey was built up which has published a set of reports ranking with the best in the country. Professor Brown prepared Bulletin No. 1 for the survey (published 1901). This is a combined bibliography and cartography for the state. Among other publications may be mentioned: "The Soils formed upon our Different Geological Formations," West Virginia *Argus* (Kingwood), May 25, 1893; "Sheep on Red Permian Soil," *Farm Reporter,* January, 1895; "The Topography of Soils of West Virginia, 1907" (published in "The Agricultural Possibilities of West Virginia" for the Jamestown Exposition); "The Geography of West Virginia, 1912" (published as a supplement to "Frye's Geography"); "The Saltsburg Sandstone as a Building Stone," SCIENCE, May, 1918; "Mineral Springs of West Virginia," *West Virginia School Journal and Educator,* February, 1922.

EARL R. SCHEFFEL

WEST VIRGINIA UNIVERSITY

SCIENTIFIC EVENTS

THE VOLCANIC ERUPTION ON THE ISLAND OF BALI

THE following account of a recent volcanic eruption on the Island of Bali, in the Indian Ocean, forwarded by Edward M. Groth, American Consul at Soerabaya, Java, under date of September 4, 1926, has been received at the Smithsonian Institution from the Department of State:

> I have the honor to report that during the night of August 2, 1926, an eruption took place on the slopes of the Goenoeng Batoer, which is one of the most famous volcanic peaks on the neighboring island of Bali.
>
> Reports which appeared in the local press and tales of returning travellers indicated that the eruption was a most impressive sight. A great column of flame and smoke was visible many miles out at sea, and the thunderings of the eruption itself were clearly heard in the town of Boeleleng on the other side of the island.
>
> A large cleft appeared on the western slope of the mountain and from this an enormous quantity of lava flowed down the mountain side, completely destroying a native village. Great quantities of rock were thrown out, to the accompaniment of mighty explosive thunderings. During the first days of the eruption the lava flowed at a speed of approximately two kilometers per twenty-four hours, the flow being more than a kilometer wide and about thirty feet thick.
>
> The government vulcanologists, who rushed to the scene of the eruption and remained there for some weeks, at the time of their departure, estimated that the total flow of lava during the first fortnight was more than one hundred million cubic meters.
>
> Due to prompt and active measures taken by the governmental officials on the island of Bali, no lives were lost as a result of the eruption and the subsequent destruction of the village of Batoer.
>
> The eruption has continued with more or less activity during the entire month since the first outbreak, but the lava flow is somewhat less than it was a fortnight ago.
>
> It is of interest to note that practically all of the volcanoes of Java when in eruption emit ashes, rocks or

hot mud, and not lava as has been the case in the Goenoeng Batoer eruption.

(Signed) EDWARD M. GROTH,
American Consul

RESULTS OF THE SMITHSONIAN-CHRYSLER EXPEDITION TO AFRICA

THE National Zoological Park, under the Smithsonian Institution, doubled its animal population of approximately 1,600 with the recent arrival of the Smithsonian-Chrysler live game collecting expedition from British East Africa. This accession gives the park one of the best representations of African material in the country. From the standpoint of the scientist and the student of natural history, it is particularly valuable because of the many smaller and rarer creatures which can ordinarily not be brought to this country due to the difficulties attendant on importation.

Besides the two giraffes which were the prime objective of the expedition, it brought back many animals which it is believed have never been seen in this country before. These include five purple-faced monkeys from Ceylon; the elephant shrew, about the size of a house rat; the water mongoose; blue monkeys; five varieties of parrots, and many soft-shelled tortoises. The prize bird is the shoebill stork —a large grayish blue bird with an enormous bill like the top of a shoe. This bird came from the Sudan government, and only one other specimen is believed to have come to this country. Its habitat is the White Nile Country, west of Abyssinia.

Specimens of the antelope family include a blue duiker and a dikdik, which is about the size of a small rabbit though with perfectly developed horns, and a greater kudu.

Among the 1,600 specimens there are, of course, many duplicates. In accordance with the policy of the Smithsonian Institution, these will be distributed to other zoological gardens throughout the country. Providing accommodations for all these animals is proving a problem of great difficulty, especially before the completion of the new buildings ordered for the zoological park. It will be many months before all the specimens can be put on exhibition.

The care of the animals during the forty-five days spent on the high seas proved difficult. Many of the tropical animals are very sensitive and require much individual attention. The expedition brought back two Tanganyika natives, who are adepts in the care of the captured animals. They will be returned to Tanganyika after a short time in Washington. With their aid the expedition was successful on the trip across, losing few animals during the voyage.

THE GREENLAND EXPEDITION OF THE AMERICAN MUSEUM OF NATURAL HISTORY

THE American Museum of Natural History Greenland Expedition, directed by George Palmer Putnam, the publisher, returned early in October from three and a half months in the North.

Captain Bartlett's schooner, the *Morrissey,* covered in all some 8,500 miles, some 3,600 north of the Arctic Circle. The furthest north was Whale Sound in latitude 78° 30′.

The primary purpose of the expedition was to secure specimens for the American Museum of Natural History, chiefly for its new hall of ocean life.

Most important among the captures is a group of narwhal, that somewhat fabulous "unicorn of the sea" which hitherto it is said has been unrepresented in any museum except by isolated skeletons. The narwhal collection includes an adult male and female specimen, complete with skeletons, skulls, flippers, plaster casts, samples of skin for color and texture photographs and measurements. Everything is there with which, for exhibition purposes, to reproduce the animals exactly. In addition to other narwhal skeletons and skulls the collection includes a small narwhal, embalmed whole, and two other complete specimens, one of a mature foetus and the other of an embryo. All these came from the Whale Sound territory and seem to represent the narwhal about as thoroughly as could be desired.

The further list of specimens brought back under the direction of H. C. Raven, zoologist of the museum, includes an excellent group of walrus; a large male and female complete with skeletons, hides and ivory, two other skins and skulls and a small walrus captured alive and subsequently chloroformed and embalmed. Then there are sharks and seals and lesser mammals, a collection of fish and bones and birds and a unique assortment of oceanographic specimens dredged from the ocean floor by Captain Bartlett. The total quantity was necessarily held down by the limited working storage facilities available on a hundred-foot schooner accommodating a total personnel of twenty, and even further by the fact that because of the condition of the vessel, after it had been aground in Northumberland Island, it was wisdom to leave the far north perhaps a fortnight earlier than might otherwise have been done.

The personnel of the party included George Palmer Putnam, the director; Captain Robert A. Bartlett, the skipper; Knud Rasmussen, Danish scientist and explorer; H. C. Raven, of the American Museum of Natural History, zoologist; Daniel W. Streeter, of Buffalo, big game hunter; Dr. Peter Heinbecker, of the Presbyterian Hospital, New York City; Art

Young, bow and arrow expert; Robert E. Peary, son of Admiral Peary, discoverer of the North Pole; Carl Dunrud, cowboy of Sweet Grass, Montana; Maurice Kellerman, of Pathé; Edward Manley, radio-operator; Fred Linekiller, taxidermist, and David Binney Putnam, thirteen-year-old son of the director.

GRANTS FROM THE LAURA SPELMAN ROCKEFELLER MEMORIAL

APPROPRIATIONS made by the Laura Spelman Rockefeller Memorial during 1925 included the sum of $787,800 in the field of child study. Appropriations made in the field of the social sciences were listed in the last issue of SCIENCE. In child study appropriations were made to the University of Iowa of $148,500 over a five-year period; to the University of Minnesota, $250,000 over a five-year period; and in Canada, to McGill University, $51,500 over a five-year period; and to the University of Toronto, $52,000 over a five-year period. In each of these institutions the plan of research on child problems involves interdepartmental collaboration, and the research program is closely articulated with experiments in methods of instruction of parents. The funds voted by the memorial to these institutions are used primarily to provide research assistance and research facilities, the principal research personnel having been already available at these centers.

Other appropriations for research in the field of child development include the Bureau of Educational Experiments, $9,000 to complete a series of investigations which have continued with support from other sources for many years; Yale University, $1,800 for research assistance in connection with Dr. Gesell's experiments. To Smith College, $36,000 over a three-year period was voted to promote study in the coordination of women's interests, under the direction of Dr. Ethel Puffer Howes.

A number of appropriations have their particular emphasis on problems of parental instruction rather than research. Funds were voted to Iowa State College of Agriculture and Mechanic Arts, $22,500 over a three-year period, for instruction of state extension agents; to Cornell University, $62,000 over a four-year period; to the State College of Agriculture and Mechanic Arts, University of Georgia, $12,000 over a three-year period, for assistance to the Georgia Parent-Teacher Association; to the Child Study Association, $4,000 toward the preparation of teaching materials, and to the American Home Economics Association, $34,000 over a five-year period, to examine the trend in home economics teaching, particularly in relation to content bearing on problems of child development.

To Teachers College, Columbia University, $50,000 was voted in addition to sums hitherto reported in behalf of the Institute of Child Welfare Research.

To the Institute J. J. Rousseau of the University of Geneva, $15,000 over a three-year period was voted to provide research assistance and facilities in connection with the institute's researches on child problems.

Provision was made for fellowships to the amount of $38,000 for individuals for research in this field, or for instruction in methods of parental education. Such fellowships will be handled in the future through the Committee on Child Development of the National Research Council.

SCIENTIFIC NOTES AND NEWS

DR. WILLIAM H. WELCH has resigned the directorship of the Johns Hopkins School of Hygiene and Public Health to accept a full-time chair in the history of medicine in the medical school, which has been endowed by a gift of $200,000 from the General Education Board. Dr. William H. Howell, professor of physiology and assistant director of the school, will succeed Dr. Welch as director.

IN connection with the recent Johns Hopkins half-century celebration a dinner was given to Dr. John J. Abel, professor of pharmacology in the university, by his former pupils and some of the other contributors to a *Festschrift* recently published in his honor. On this occasion took place the formal presentation of a Morocco bound copy of the volume, which had been issued as Volume XXIX of the *Journal of Pharmacology and Experimental Therapeutics*, which Dr. Abel founded in 1909 and which he continues to edit. Among the contributors to the volume are some of the leading scientific men of Europe and the United States. Congratulatory telegrams and cables were received from Dr. Abel's many friends and colleagues in this country and in Europe.

PRINCETON UNIVERSITY has announced plans to raise a fund of $50,000 for research in vertebrate paleontology, in honor of Professor William Berryman Scott, senior member of the Princeton faculty and head of the department of paleontology.

ON the occasion of the opening exercises of its new building, the New York Academy of Medicine will give a dinner on November 17 at the Waldorf-Astoria Hotel, in honor of twenty-two newly elected honorary fellows, each of whom has been selected on account of his contributions to medical science in the last twenty years. The new honorary fellows are: Robert Barany, Upsala; Charles James Martin, London; Sir Charles Sherrington, Oxford; Marin T. Tuffier, Paris; Josef Jadassohn, Breslau; Friedrich Neufeld, Berlin;

Carlos Chagas, Rio de Janeiro; Frank Billings, Chicago; George E. de Schweinitz, Philadelphia; John M. T. Finney, Baltimore; Theobald Smith, Princeton; Edward William Archibald, Montreal; Sir George Newman, London; Henry Head, London; George F. I. Widal, Paris; Friedrich Müller, Munich; Vittorio Putti, Bologna; John Jacob Abel, Baltimore; Harvey W. Cushing, Boston; George Dock, Pasadena, Calif.; Chevalier Jackson, Philadelphia; William Sydney Thayer, Baltimore.

THE Lister Medal for distinguished contributions to surgical science, with the honorarium of £500, has been awarded by the committee of representatives from the Royal Society, the Royal Colleges of Surgeons of England and Ireland and the Universities of Edinburgh and Glasgow to Professor A. F. von Eiselsberg, of Vienna. This is the second award of the medal; the first was to Sir William Watson Cheyne. An address is to be given by Professor von Eiselsberg at the Royal College of Surgeons of England, in accordance with the conditions of the trust, on July 7, 1927.

THE University of Leeds has conferred the title of emeritus professor on Professor A. G. Perkin, who recently retired from the chair of color chemistry.

DR. MEYER E. JAFFA, the oldest professor in the University of California from point of service, has retired under the age limit rules and has been made professor emeritus of nutrition.

THE Tufts Biology Club on October 26 combined with its regular meeting a special celebration for Professor Fred D. Lambert, who has been teaching in the department for twenty-two years, in honor of his birthday.

ELMER HIGGINS, formerly director of the Key West (Fla.) biological station, has been appointed assistant in charge of the division of scientific inquiry of the United States Bureau of Fisheries to succeed Dr. Willis H. Rich. Dr. Rich has gone to the west coast, where he will assume the duties of director of the bureau's laboratory at Seattle and of chief salmon investigator in charge of the expanded program of the International Salmon Investigation Federation.

FRANK B. CUMMINGS, of Newton, has succeeded Dr. Lester H. Howard as director of the state division of animal industry, Massachusetts.

DR. DAVID L. EDSALL, dean of Harvard Medical School, has gone to the Peking Union Medical College, in China, at which place he is to be visiting professor of medicine. In Dr. Edsall's absence, Dr. Walter B. Cannon, George Higginson professor of physiology in the school, is the acting dean.

DR. T. A. JAGGAR, in charge of the section of volcanology of the U. S. Geological Survey, has returned to the Hawaiian Volcano Observatory and will be assisted by R. M. Wilson and R. B. Hodges. R. H. Finch has been assigned to take charge of the newly established Lassen Volcano Observatory at Lassen Peak, California.

DR. A. E. EMERSON, associate professor of zoology at the University of Pittsburgh, has been granted a year's leave of absence to continue his studies of the phylogenetic origin of the castes of termites on a Guggenheim Fellowship. Professor Emerson is now working with Professor F. Silvestri, R. Laboratorio di Entomologia Agraria, Portici, Italy.

NEIL M. JUDD, curator of American archeology in the U. S. National Museum, has returned from explorations in New Mexico in behalf of the National Geographic Society. The expedition just concluded marks the sixth field season of the Pueblo Bonito Expedition, under the direction of Mr. Judd.

DR. J. W. GIDLEY, paleontologist of the Smithsonian Institution, has left Washington to investigate reported finds of a fossil elephant at Venice, Florida.

DR. H. U. SVERDRUP sailed from New York on October 14 for Norway to take up the directorship of the Geophysical Institute B at Bergen.

DR. ARTHUR W. HILL, director of Kew Gardens, England, recently spent some days in Washington, visiting the National Herbarium and studying methods of plant quarantine at the U. S. Department of Agriculture.

DR. E. L. TAYLOR, of the Royal College of Veterinary Surgeons, is spending a year in this country studying in the parasitical laboratory of the U. S. Bureau of Animal Industry. On his return to England he will take charge of the parasitological department of the research division of the Ministry of Agriculture.

DR. MICHAEL I. PUPIN, professor of electromechanics at Columbia University, will address the first meeting to be held in the new building of the New York Academy of Medicine, Fifth Avenue and 103rd Street. On this occasion Dr. Pupin will give the Carpenter lecture on the subject of "Ionization and Chemical Reactions."

DR. ROBERT CHAMBERS, professor of microscopic anatomy at Cornell University Medical College, will deliver the second Harvey Society lecture at the New York Academy of Medicine (new building, 103rd Street and Fifth Avenue) on Saturday, November 20. His subject will be "The Nature of the Living Cell revealed by Microdissection."

DR. CECIL HOWARD LANDER, director of fuel research in the Department of Scientific and Industrial Research, London, will give the Robert Henry Thurston lecture of the American Society of Mechanical Engineers on December 7 in New York, as part of the annual meeting of the society.

PROFESSOR R. WILLSTÄTTER has been invited to deliver the Dunham lectures at Harvard University in the spring of 1927.

THE Lloyd Roberts lecture for 1926, at the Manchester Royal Infirmary, was delivered by Dr. W. E. Gye on November 9. The subject was "An Outline of the Knowledge gained by the Experimental Study of Cancer."

A REPLICA of the portrait of the late Sir Richard Douglas Powell, by Spencer Watson, was presented to the Royal College of Physicians by his son, Sir Douglas Powell, at the quarterly meeting of the college on October 29.

THE time usually devoted to the meeting of the general staff of the Mayo Clinic, on September 29, was given to the presentation of a bronze tablet commemorating Dr. Russell D. Carman, by the American Roentgen Ray Society.

THE following resolution on the death of Dr. John Howland, professor of pediatrics at the Johns Hopkins University, was passed on October 19: "The board of directors of the Russell Sage Institute of Pathology, in sorrowfully recording the death of their late associate, Dr. John Howland, for seven years a faithful fellow member of the board, desire to express their high esteem of his exceptional intellectual powers, which led to pioneer discoveries in the field of tetany and of rickets; their admiration of his life, which was completely dedicated to the welfare of little children, and their appreciation of the unselfish and lofty idealism of his character." The resolution is signed by Dr. D. M. Delavan, Professor Lafayette B. Mendel, Professor Graham Lusk and Dr. Homer F. Swift.

DR. HERBERT A. HOWE, dean of the college of liberal arts at the University of Denver and director of the Chamberlin Observatory at the university, has died at the age of sixty-eight years.

G. W. LAMPLUGH, F.R.S., formerly assistant director of the British Geological Survey, died on October 9 at the age of sixty-seven years.

DR. WILLIAM E. FOTHERGILL, professor of obstetrics and gynecology at the University of Manchester, died on November 4 at the age of sixty-one years.

PROFESSOR JOHN D. F. GILCHRIST, professor of zoology at the University of Cape Town, South Africa, has died at the age of sixty years.

Nature records the following deaths: Sir John Bucknell, Puisne judge of the Patna High Court, formerly editor of the *Journal of the South African Ornithologists' Union* and author of works on the birds of Surrey and of Cyprus, on October 5, aged fifty-three years; Mr. George Lewis, who devoted the greater part of his life to the study of the Coleoptera, and particularly the Histeridae, visiting China, Japan, Ceylon and Algiers, on September 5, aged eighty-seven years; Mr. Charles Turner, for many years principal of the Manchester School of Pharmacy, who made many contributions to our knowledge of the freshwater algae, on September 10, aged sixty-two years.

DR. JOHN W. BRODNAX, associate professor of anatomy in the Medical College of Virginia, who recently died, was incorrectly reported in SCIENCE as being associated with the University of Virginia.

THE Henry M. Sanders laboratory of physics at Vassar College was dedicated on October 18, as already recorded in SCIENCE. A lecture by Professor Michael I. Pupin on "The Relation of Physics to Modern Scientific Idealism" initiated a "Physics week" which included other lectures as follows: Professor Thomas H. Morgan, "The Relation of Physics to Biology"; Dr. Willis R. Whitney, "The Relation of Physics and Chemistry to Industry"; Professor Henry Norris Russell, "The Relation of Physics to Astronomy"; Professor Robert A. Millikan, "Changing Conceptions of Matter"; Professor Frederick A. Saunders, "The Relation of Physics to the Fine Arts."

THE next meeting of the Society for Experimental Biology and Medicine will be held at the Rockefeller Institute on November 17, at 8:15 P. M. There are seven papers on the scientific program. Previous to the reading of papers Dr. Donald Van Slyke of the institute will demonstrate gasometric methods for micro-determination of calcium sugar, urea and Kjeldahl nitrogen, on the seventh floor of the hospital building, beginning at 7:30 P. M.

THE highway research board of the National Research Council, of which Dr. Charles M. Upham is director, has announced plans for the sixth annual session of the research board, which will be held at the building of the National Academy of Sciences on December 2 and 3. It is expected that this meeting will be the largest and most important meeting of highway officials hitherto held in Washington.

THE following free public lectures will be given at the New York Botanical Garden during November on Saturday afternoons at 3:30: November 6—"Chrysanthemums," Kenneth R. Boynton; November 13—"Fossil Plants of New York City and Vicinity," Dr. Arthur Hollick; November 20—"Outdoor Roses," F. L. Atkins; November 27—"Nature-Study in National, State, and County Parks," Raymond H. Torrey.

THE Smithsonian Institution has received a letter from Mr. A. Dryden, Keetmanshoop, Southwest Africa, which reports the successful completion of the observatory constructions on Mt. Brukkaros. The cooperation with the Smithsonian Institution disembarked at Cape Town on September 13 and is believed to be nearly ready to begin actual observations of solar radiation on Mt. Brukkaros.

A CELEBRATION of the twenty-fifth anniversary of the Bureau of Standards of the Department of Commerce took place on December 4. The bureau was open to visitors and a banquet was given at which the friends of the bureau met the staff. The achievements of the quarter century were reviewed, and the present and future work discussed. A group of distinguished guests attended.

THE Rockefeller International Education Board has given to Norway a sum of about $74,000 for the building and equipping of the new Auroral Observatory, and the Norwegian Government has decided to maintain the observatory with an annual budget of about $12,000. The scientific work will be done in accordance with plans and instructions given by a commission consisting of Director O. Krogness (Geophysical Institute, Tromso), Professor C. Störmer (University, Oslo), Professor S. Saeland (University, Oslo), Professor L. Vegard (University, Oslo), and the future director of the new observatory.

THE will of Dr. William Sturgis Bigelow, of Boston, who died on October 6, leaves more than $200,000 in equal shares to the Boston Museum of Fine Arts, Harvard College and the Massachusetts General Hospital.

ACCORDING to the Japanese correspondent of the *Journal* of the American Medical Association seventy-seven medical research workers in colleges and laboratories, public or private, have been given stipends for this year.

A NEW series of numbered papers to be known as *Publications of The American Association of Museums* is to replace *Museum Work*. The magazine completed its eighth and last volume just prior to the annual meeting of the Association in New York last May.

DR. A. P. KNIGHT, director of the Biological Board of Canada, writes that the board has found that all lobster fry die which are hatched out in cold water (58° F. and under) whereas those hatched in warm water (58° and over) have a fair chance of living. The boards therefore directed last summer 17 spawn lobsters to be transported from the cold waters of the western end to the warm waters of the eastern end of St. Mary's Bay, N. S., in the hope that a fair percentage of the resulting 700,000 eggs might survive and become adults.

HEADQUARTERS of The American Association of Museums are again at the Smithsonian Institution, Washington, D. C., in the same suite on the third floor of the old National Museum building which was occupied prior to 1924. The New York offices from which the association has operated since September of that year are now closed. Decision to bring about the change was made by the council of the association at its annual meeting last May, as the chief purpose which had prompted the move to New York had been realized, and it was considered unnecessary to continue under the greater expense which was brought upon the association when it relinquished the hospitality of the Smithsonian Institution. At the time of the move two years ago, the organization had just undertaken a demonstration program under a three-year financial lease of life. Now it has passed the crisis of May, 1926, and plans for its continued support have been substantially grounded. Professor Charles R. Richards, who is on leave as director, will continue in New York. The work at Washington headquarters will go forward under the direction of Laurence Vail Coleman, in the dual capacity of executive secretary and acting director.

THROUGH the efforts of Dr. Willard Rouse Jillson, state geologist of Kentucky, additional state funds in the sum of $30,000 have recently been secured for cooperative topographic mapping. Coupled with previous appropriations amounting to $20,000, these new funds give a total of $50,000 in state moneys now available for this purpose. The United States Geological Survey has matched the new state appropriations, thereby releasing for new topographical work in Kentucky during the present fiscal year $100,000. About sixty engineers are now at work in Kentucky, which has now been mapped topographically slightly in excess of 50 per cent. About twelve new sheets will be completed this fall, while vertical and horizontal control will be extended over about twice this area. State funds were secured by Dr. Jillson from the State Highway Commission, he having demonstrated by utilizing the new Frankfort quadrangle in location work, that sums greatly in excess of the cost

of topographic work in a region of considerable relief could be saved in new modern highway construction by mapping the region topographically in advance of road location. The program now in hand by the Kentucky Geological Survey forecasts the early completion of the topographical map of Kentucky.

IT is announced that one of the world's greatest observatories is to be built on Salève Mountain in French territory, near Geneva, by M. Dina, an American resident of France since 1914. M. Dina is an amateur astronomer, who gave 1,000,000 francs to the French Academy of Sciences for astronomical studies and who is undertaking to increase the efficiency of Mont Blanc observatory. Several lenses for the new observatory are being ground at the Paris Observatory, of which the largest is said to be 58 inches in diameter.

AT a meeting of the medical fellowship board of the National Research Council held on September 18 the following were appointed fellows: Dr. Samuel W. Becker, to work at Zurich in the field of dermatology and syphilology; Oran I. Cutler, to work at Stanford University in pathology; Dr. Claus W. Jungeblut, to work in the field of bacteriology and immunology at Columbia University; Dr. David Perla, to work in pathology and experimental medicine, place not yet determined, and Dr. Richard Thompson, to work in bacteriology and serology, place not yet determined. At this meeting five fellows were reappointed. Two of them, Dr. Charles Weiss and Dr. Maurice B. Visscher, have since resigned, Dr. Weiss to become director of the laboratories of the Presbyterian Hospital at San Juan, Porto Rico, and Dr. Visscher to take a position in the department of physiology at the University of Tennessee. The other appointments are Dr. Ralph Waldo Gerard, in the field of physiology to work in Berlin, Cambridge and Oxford; Dr. Robert O. Loebel, for six months, to continue his work in physiology at the Russell Sage Institute of Pathology, New York, and Jeffries Wyman, Jr., for two months, on the field of physiology, to work at the University of London.

WE learn from *Nature* that the following courses of lectures have been arranged at the Royal Institution during November and December. The Tyndall lectures will be delivered by Dr. G. W. C. Kaye, who will commence a course of three lectures on the acoustics of public buildings on November 2 at 5.15; and on November 23 Sir William Bragg begins a course of four lectures on the imperfect crystallization of common things. On Thursday afternoons, beginning on November 4, there will be two lectures by Sir Edgeworth David on Antarctic exploration of the past and future; three by Dr. R. R. Marett on the archeology of the Channel Islands; and two by Sir Squire Sprigge on (1) early medical literature and (2) medical literature in relation to journalism. On November 27 and December 4, at three o'clock, Dr. G. C. Simpson will give two lectures on atmospheric electricity. The juvenile lectures this year, the hundred and first course, will be delivered by Professor A. V. Hill on nerves and muscles, how we move and feel: (1) Nerves and the messages they carry (December 28); (2) muscles and how they move (December 30); (3) the heart and some other muscles (January 1); (4) the lungs and blood (January 4); (5) nerves and muscles working together (January 6); (6) speed, strength and endurance (January 8).

THE REVEREND HILDERIC FRIEND, who recently presented his collections of earthworms to the British Museum, has now given to the biological department of the University of Birmingham a further collection of material, consisting in tubes of oligochaetes (chiefly enchytraeids) and water worms—some of them type specimens and quite unique. The gift also includes a valuable collection of books and MSS. and material relating to the distribution of annelids in Great Britain and Ireland.

A DEPARTMENT of fisheries under the Ministry of Agriculture is being established in Siam. It is believed that the fisheries are capable of very considerable development.

MR. JOHN D. ROCKEFELLER, JR., has presented three and a half million francs to the University of Strasbourg for the enlargement of the ear and nose clinic and for the completion of various unfinished researches.

GIFTS totaling $500,000, the income from which is to be used for research in and the teaching of ophthalmology at the Massachusetts Eye and Ear Infirmary, were announced on November 5 at a banquet of officials and guests of the board of management held at the Algonquin Club in observance of the one hundredth anniversary of that institution and of the official opening of the $1,500,000 drive. In addition, James Dean, chairman of the drive, stated that $250,000 more was in sight from special sources, hence the public would be asked for $750,000, of which $320,000 would be used to construct a new out-patient building.

THE Commonwealth Fund has announced plans for the establishment, on July 1, 1927, of an Institute for Child Guidance, of which Lawson G. Lowrey will be director. The institute has been established on the experience gained in the operation of the fund's five-year program in the field of juvenile delinquency.

THE laboratory of W. Faitoute Munn, the Munn Laboratories, has recently moved from 518 Main

Street, East Orange, N. J., to 318 White Street, Orange, N. J., where larger quarters have been obtained for the continuance of research problems and investigation.

UNIVERSITY AND EDUCATIONAL NOTES

THE late Dwight William Tryon, for thirty-three years head of the art department of Smith College, has left to the college $355,340.

GROUND was broken on November 5 on the first unit of the Bryan Memorial University, to be built on a knoll overlooking Dayton, Tenn., where William Jennings Bryan died.

GROUND will be broken this week for the construction of a new science building at Fordham University. The building will be three stories high and will contain twelve classrooms. The estimated cost will be $275,000.

DR. DETLEV W. BRONK, assistant professor of physiology in the University of Michigan Medical School, has resigned his position to take charge of the department of physiology and bio-physics in the division of biology at Swarthmore College. He is also associated with the school of medicine of the University of Pennsylvania as instructor in physiology.

ASSOCIATE PROFESSOR G. SIMON, of Adelbert College, Western Reserve University, has been promoted to a full professorship of mathematics.

DR. ARTHUR CURTIS has been appointed head of the department of gynecology at the medical school of Northwestern University, to succeed the late Dr. Thomas Watkins.

DR. WILLIAM B. PORTER, now chief of the department of medicine, Lewis-Gale Hospital, Roanoke, Virginia, has been elected whole-time professor of medicine at the Medical College of Virginia, Richmond. Next summer, after studying medical educational procedures in leading American and European universities during the coming winter and spring, Dr. Porter will take up his active work at the college.

HENRY A. BEHRE, of Scarsdale, N. Y., has been appointed assistant professor of mining in the Sheffield Scientific School of Yale University. Professor Edward A. Robinson, of the University of Chicago, has been appointed visiting associate professor of psychology.

AT the University of Pittsburgh, the following instructors have been added to the staff of the department of zoology: Dr. E. Alfred Wolf, from Breslau; Jean MacCreight, from the University of Pittsburgh, and A. W. Kozelka, from the University of Wisconsin.

DR. RALPH W. MENDELSON has arrived in New Orleans to take up his work as assistant professor of tropical medicine at Tulane University School of Medicine under the direction of Professor Aldo Castellani.

DISCUSSION AND CORRESPONDENCE

A PRICELESS DARWIN LETTER

THE day of publication of the immortal volume entitled "On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life" was November 24, 1859. On the same day Charles Darwin, who at the time appears to have been taking the cure at Ilkley, wrote the following highly characteristic letter to his friend Huxley:

ILKLEY, WELLS HOUSE
24th OTLY, YORKSHIRE

My dear Huxley

I have heard from Murray today that he sold whole edition of my Book the first day, & he wants another instantly, which confounds me, as I can make hardly any corrections. But a friend writes to me that it ought to be Geoffroy DE St. Hilaire: my memory says *no*. Will you turn to a title-page & tell me soon and forgive me asking this trouble.

Remember how deeply I wish to know your general impression of the truth of the theory of Natural Selection.—only a short note—at some future time if you have any lengthy criticisms, I sd be infinitely grateful for them. You know well how highly I value your opinion. —In Haste, for I am bothered to death by this new edition

Ever yours
C. DARWIN

The letter reveals many of Darwin's characteristics: First, his modesty regarding his work, expressed indirectly in his surprise that his publisher sold the whole edition on the first day; second, his difficulty in writing, as shown in the abbreviated style of this letter and in his feeling "confounded" by the demand for certain corrections; third, his feeling of hesitation in putting forth the theory of Natural Selection and his desire to secure Huxley's general impression as to its truth; fourth, his thoughtfulness in asking Huxley "only a short note" and at some future time lengthy criticisms, if they were forthcoming; fifth, the very high value he placed upon Huxley's opinion, in contrast to his doubt as to his own opinions; finally, his dismay at the thought of corrections for a new edition, which "confounded" him and "bothered him to death."

This letter evidently crossed in the mails Huxley's letter of criticism of the "Origin," dated November 23, which appears in full in "The Life and Letters of Huxley" and in "Charles Darwin, Autobiography and Letters" (p. 225), and from which a few quotations may be interesting here:

I finished your book yesterday [advance copy], a lucky examination having furnished me with a few hours of continuous leisure. . . .

As to the first four chapters, I agree thoroughly and fully with all the principles laid down in them. I think you have demonstrated a true cause for the production of species, and have thrown the *onus probandi*, that species did not arise in the way you suppose, on your adversaries. . . .

The only objections that have occurred to me are, 1st that you have loaded yourself with an unnecessary difficulty in adopting *Natura non facit saltum* so unreservedly. . . . And 2nd, it is not clear to me why, if continual physical conditions are of so little moment as you suppose, variation should occur at all. . . .

Looking back over my letter, it really expresses so feebly all I think about you and your noble book that I am half ashamed of it; but you will understand that, like the parrot in the story, "I think the more."

To this letter Darwin, who at the time was at Ilkley, replied on November 25:

My dear Huxley,—Your letter has been forwarded to me from Down. Like a good Catholic who has received extreme unction, I can now sing "nunc dimittis." I should have been more than contented with one quarter of what you have said. Exactly fifteen months ago, when I put pen to paper for this volume, I had awful misgivings; and thought perhaps I had deluded myself, like so many have done, and I then fixed in my mind three judges, on whose decision I determined mentally to abide. The judges were Lyell, Hooker, and yourself. It was this which made me so excessively anxious for your verdict. . . .

My dear Huxley, I thank you cordially for your letter.

Yours very sincerely.

Darwin's priceless letter of November 24, apparently now published for the first time, was most generously presented by Leonard Huxley to Professor Osborn during his recent visit to London; it will ultimately find its way to the Darwin Hall in the American Museum of Natural History to be placed beside the statue of Darwin near the equally priceless manuscript page from the "Origin" presented to the Museum by Major Leonard Darwin.

Professor Osborn immediately endeavored to secure a copy of the first printing of the "Origin of Species," of date November 24, 1859, and finally was so fortunate as to purchase one for the museum at a recent sale. This copy bears the inscription J. Bute Jukes (the geologist). It was learned through Professor Edward B. Poulton, the leading Darwin scholar of Oxford University, that the first printing and edition may be recognized by the presence on page 184 of the following passage, which was omitted in subsequent printings:

In North America the black bear was seen by Hearne swimming for hours with widely open mouth, thus catching, like a whale, insects in the water. Even in so extreme a case as this, if the supply of insects were constant, and if better adapted competitors did not already exist in the country, I can see no difficulty in a race of bears being rendered, by natural selection, more and more aquatic in their structure and habits, with larger and larger mouths, till a creature was produced as monstrous as a whale.

Certainly the subsequent editions of the "Origin" were materially improved by the omission of this fabulous story of the habits of the black bear, which probably goes back to an early period of the development of natural history in North America.

HENRY FAIRFIELD OSBORN

WOODSOME LODGE,
GARRISON, NEW YORK,
October 12, 1926

MAMMOTH FOUND IN LOESS OF WASHINGTON

THE bones of a mammoth (Elephas primigenius) have been found in a loess deposit a mile southwest of Cheney, Washington. The fossils were found on a hillside and occurred at the top of glacial till overlain by loess. A farmer plowed up a bone and digging unearthed the remains, which were close to the surface. The till is well weathered and is probably the earliest of three known glacial periods in eastern Washington. Many of the bones had completely decayed, but the teeth were well preserved. It is probable that the mammoth lived and died in an interglacial period earlier than that which immediately preceded the Wisconsin stage of glaciation. While a considerable mammalian fauna has been found in the loess of the Mississippi Valley, so far as the writer is aware this is the first occurrence of fossils reported from the loess or Palouse soil of eastern Washington, although several mammoths have been found in peat bogs.

O. W. FREEMAN

STATE NORMAL SCHOOL,
CHENEY, WASHINGTON

A CORRECTION

ON page 402 of SCIENCE for October 22 the announcement is made (doubtless official) that I will

address the agronomists on December 3 on statistical methods. This statement has never been authorized by me and in fact I have more than once assured the secretary of this society that I would make no decision with respect to consenting to speak on this occasion until certain conditions had been complied with. There has been no indication that the conditions will be complied with. I seriously object to being dragooned into giving public talks by being announced as a speaker before I have consented to speak. I shall not make the address announced for me.

E. B. WILSON

DEPARTMENT OF VITAL STATISTICS,
HARVARD UNIVERSITY

QUOTATIONS

DR. WELCH'S NEW CHAIR

JOHNS HOPKINS UNIVERSITY in establishing a chair for the history of medicine, believed to be the first of such scope in America, is emphasizing the importance of the physician's background. In no other profession, unless it be the ministry, is a background more important than in that which has to do with progress in knowledge and treatment of bodies in which there is something, as Dr. Thomas Browne said, "that can be without us and will be after us, though it is strange that it hath no history what it was before us nor can not tell how it entered in us." But history in the hands of physicians and surgeons and research students has been written during the three centuries since that physician who desired to be remembered only in the "universal register of God," wrote his "Religio Medici." No one in America knows that history better than Dr. William H. Welch, who is to be the first occupant of the first American chair in this subject.

Dr. Welch has already two major achievements to his credit. In 1884 he organized the faculty of the Johns Hopkins Medical School, and in 1916 he organized the Johns Hopkins School of Hygiene and Public Health. In the first he led "a new departure in medical education," and incidentally trained a number of the foremost pathologists of America, besides doing important research work himself. In the second, he organized and directed the work of the first medical institution in the world designed primarily to promote research and teaching in the field of preventive medicine and public health.

Now he enters upon a third undertaking in which the cure and prevention of disease are linked into a unity. With his unusual experience and learning, unsurpassed since Dr. Osler's death, and with a personality drawing all men to him, he comes in the autumn of his life to give of his own culture to the enrichment of those who are to carry on in his profession. Some may look upon such study as a mere ornament in medical practice; but his answer is that it is "an asset to successful practice and to the pursuit of medical science." It is essential to a further development of what we now have to show how we came into possession of it. He cites Dr. William Osler, his former associate, "one of the outstanding physicians of all time," as a man whose knowledge was "very largely based on the history of medicine." He might have cited also Sir Thomas Browne:

> I could never content my contemplation with those general pieces of wonder—the Flux and Reflux of the Sea, the increase of Nile, the conversion of the Needle to the North; and have studied to match and parallel those in the more obvious and neglected pieces of Nature which without further travel I can do in the cosmography of myself. We carry with us the wonders we seek without us; there is all Africa and her prodigies in us. We are the bold and adventurous piece of Nature which he that studies wisely learns in a compendium what others labor at in a divided piece and endless volume.

It is the history of man's exploration and discovery in the cosmography of his own self that Dr. Welch will now teach; and his own achievement is the best testimony to the value of his subject. His entrance upon this work is itself another milestone in the history of medicine in America.—*The New York Times.*

SCIENTIFIC BOOKS

General Botany. By C. STUART GAGER. Pp. xvi + 1055, 689 text figures. P. Blakiston's Son & Co., 1926.

THE multiplication of botanical texts indicates not only the progress of botany, but also the great variety of judgment as to its presentation to students. Gager has written several texts, but the present one is a voluminous compendium of botany in general, presented with an unusual purpose. In the preface, the author discusses the purpose and emphasizes the idea that all education should regard "the individual and society as of primary importance," the subject being merely a means of training the student in thinking and in rendering public service. As he puts it, "the great need is not so much to know *what* to think, but *how* to think." It is expected that laboratory work will be the foundation for using the text, but this is "enriched" with information of educational value. The thought is summed up in the statement that "the aim has been to show that plant life has been, throughout history, and still is closely interwoven with human life." The title of the book states

that it deals with botany "with special reference to its economic aspects." The text is really a presentation of botany as contributing to human welfare throughout its whole history. It is made interesting, therefore, not only for students who propose to specialize in the subject, but also for those who come only into brief contact with it, opening up a perspective that is full of information and suggestion. The chief constituency for which the text is prepared, however, is for those interested in the application of botany "to horticulture or agriculture and other occupations founded in whole or in part upon the science of botany." With such a purpose, the organization of the text is of interest.

It is divided into five parts. The first is called the "Introduction." It introduces the student to the problems of botany by using the clover as an illustration. All through the text, the plants used are those that are familiar, rather than forms that are generally unknown. The general problems as presented by a flowering plant are numerous and difficult and are extended to include cell structure.

With this introduction, the second part deals with "The vegetative functions of plants," in twelve chapters, practically the problems of physiology, such as water absorption, transpiration, respiration, nutrition, growth, adjustment to surroundings, and many kindred problems. In short, it presents the plant in action, based on the structure illustrated by the clover.

The third part presents, in eleven chapters, the subjects of reproduction and life-histories, beginning with seed plants, telling "how seeds are made," and continuing the presentation through the Cryptogams. This part closes with a chapter on the problem of sex in plants.

The fourth part deals with the classification of seed plants, the preliminary chapters stating the principles of classification and evolution. The classification of Dicotyledons is presented in seven chapters, and that of the Monocotyledons in four. The families of economic importance are presented, and fully illustrated, so that the student is able to understand the origin and structure of the plant products with which he is familiar. This part of the book naturally resembles an encyclopedia, for consultation rather than for continuous reading.

The final part presents the subjects of genetics and evolution in four chapters, whose titles are suggestive: Heredity, variation, and environment; the physical basis of heredity; generalizations and special cases; evolution.

The general order of presentation of the plant groups is to descend from seed plants, with all their complexities, to the lower groups, reversing the order of evolution. The argument in favor of this sequence is that the first contact is with commonly known plants. The argument against such a sequence is that the first contact is with bewildering complexity of structure. There will always be differences in judgment as to which argument should prevail.

The belief that botany should be presented in its historical position and economic importance should certainly be commended, for it develops general interest in a great field of scientific activity, a field that has too long not received the appreciation it deserves. After all, the usefulness of a text depends largely upon the teacher who is using it, and Gager's book is full of information that can be made the basis of various kinds of teaching. The numerous excellent illustrations are to be especially commended, since they make the facts visible and help to interpret the text. As a whole the book is a valuable addition to our botanical texts, being a great collection of information and suggestion, and broadening the perspective of botany for the student. The details are too numerous for a critical review, but the attitude of the author may be judged by a quotation from Epictetus with which he closes the preface:

"If they who find some faults in it were as intimate with it as I am, they would find a great many more."

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SPECIAL ARTICLES

THE FACTOR OF AGE IN THE CHEMICAL STABILITY OF THE BLOOD DURING GESTATION[1]

DURING the past six years, investigations[2,3,4] have been undertaken in this laboratory which were concerned with the stability of the acid-base equilibrium of the blood in normal dogs at different age periods, and also in normal and nephropathic animals when subjected to a general anesthetic or intoxicated by uranium nitrate, an acid or an alkali. Such experiments have shown the relative inability of old animals to maintain or when disturbed to reestablish this fundamental balance of the blood. It would appear that

[1] Aided by a grant from the Ella Sachs Plotz Foundation.

[2] MacNider, Wm. de B., "Concerning the Influence of the Age of an Organism in maintaining its Acid-Base Equilibrium," SCIENCE, n. s., Vol. XLVI, No. 1200, 643, 1917.

[3] MacNider, Wm. de B., "A Consideration of the Relative Toxicity of Uranium Nitrate for Animals of Different Ages," *Jour. Exp. Med.*, Vol. XXVI, 1, 1917.

[4] MacNider, Wm. de B., "On the Stability of the Acid-Base Equilibrium of the Blood in Normal and in Naturally Nephropathic Animals," SCIENCE, n. s., Vol. LIII, No. 1363, 141, 1921.

as the state of senility is approached in the life of such organisms, some mechanism other than that of the kidney, which in part maintains a normal acid-base equilibrium for the blood and tissue juices, becomes less able to function when subjected to the strain induced by certain intoxications. Studies of a similar character have been carried on by McArthur[5] on planarians. He observed a decrease in the tolerance to acid and alkaline solutions as the age of these organisms increased.

The following observations[6] have been made over a period of ten years. They are concerned with the stability of the acid-base equilibrium of the blood during gestation, and with the influence of the age of the animal and the duration of the gestation period in maintaining this balance of the organism. Seventy-four dogs have been studied during the period of pregnancy. The animals have varied in age from eleven months to ten years and four months. Determinations of the acid-base equilibrium of the blood as indicated by the reserve alkali of the blood (R.pH) were made by the method of Marriott[7] at the fourth week of the gestation period and during the terminal week. As a result of these studies in which the factor of the age of the animal has been considered, they may be divided into three groups. Group I is represented by twenty-two pregnant dogs between eleven months and three years of age. At the end of the fourth week of gestation, no disturbance had occurred in the acid-base equilibrium of the blood of this youngest group of animals. The reserve alkali of the blood was normal and varied from 8.0 to 8.15. Two of the animals in the group during the last week of the gestation period were unable to maintain this balance and showed a reduction in the reserve alkali of the blood to 7.95. The remaining twenty animals maintained a normal acid-base equilibrium of the blood throughout the period of gestation.

Group II is represented by thirty-four dogs, which varied in age from three years and one month to six years. The group is represented by animals between the two extremes of youth and early senility. By the end of the fourth week of the gestation period, one of the dogs in this group showed a reduction in the reserve alkali of the blood to 7.9. At the end of the gestation period, during the ninth week, twelve of the thirty-four animals showed a reduction in the reserve alkali which varied from the slight reduction from a normal of 8.0 to 7.95 to the maximum reduction from a normal of 8.15 to 7.85. Twenty-two of the animals in the group came to the end of the period of gestation without any disturbance in the acid-base equilibrium.

Group III is represented by eighteen dogs, which varied in age from six years to ten years and four months. These animals comprise the group approaching senility. At the end of the fourth week of the gestation period in animals falling in this group, eleven had shown a disturbance in the acid-base equilibrium of the blood. The reserve alkali was reduced from the normal readings of 8.0 or 8.15 to 7.9. At the end of the gestation period fourteen of the eighteen animals had developed in the reserve alkali a reduction which varied from a reading of 7.95 to 7.85.

The above observations on seventy-four pregnant animals of different ages and falling in three age groups, indicate that during a period of gestation in normal dogs there is a definite tendency for one of the physico-chemical states of the organism to become unstable. In a certain number of the animals there occurs a reduction in the reserve alkali of the blood. These observations furthermore show that this instability of the acid-base equilibrium of the blood during gestation is associated with the age of the animal and the duration of the gestation period. Pregnancy in old animals (Group III) is more apt to disturb this equilibrium than is the case in young animals. In old animals the disturbance develops at an earlier stage of the gestation period than it does in the younger groups of animals. The suggestion is made that these observations may have some connection with the development of the toxaemias of pregnancy.

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[5] McArthur, J. W., "Changes in Acid and Alkali Tolerance with Age in Planarians," *Amer. Jour. Phys.*, Vol. LIV, 138, 1920.

[6] MacNider, Wm. de B., "Concerning the Stability of the Acid Base Equilibrium of the Blood in Pregnant Animals," *Jour. Exp. Med.*, Vol. XLIII, 53, 1926.

[7] Marriott, W. McKim, "A Method for the Determination of the Alkali Reserve of the Blood Plasma," Arch. Int. Med., Vol. XVII, 840, 1916.

THE MAGNETIC MOMENT OF ATOMIC HYDROGEN[1]

The researches of Stern and Gerlach[2] have established the quantum nature of magnetic moment for several of the atoms. Unusual interest attaches to the magnetic moment of the simplest of the atoms, atomic hydrogen.

In this research atomic hydrogen was prepared in a long discharge tube from undried electrolytic hydrogen by the method of R. W. Wood. An all-glass slit

[1] Contribution from the Chemical Laboratory, University of Illinois, Urbana, Illinois. September 11, 1926.

[2] *Ann. d. Phys.*, *74*, 673 (1924); *76*, 163 (1925).

system of three slits was made from Pyrex glass by a special method and sealed to the mid-point of the discharge tube. Between each pair of slits, tubes led off through liquid air traps to separate high-speed mercury vapor pumps. This use of separate pumps maintained a progressively increasing vacuum in the slit system and allowed the formation of an atomic ray with a minimum of general scattering. The slit system was cemented into a brass box[3] containing the pole pieces and the target.

An optical surface of Pyrex glass smoked with molybdenum oxide constituted the target. Without the magnetic field, a sharply defined slate-blue line on a white (or slightly yellowish) background resulted from an exposure of an hour or less to the discharge. With the magnetic field on, the central part of the line showed a distinct separation into two branches. This effect was best observed by light transmitted through the image. When observed by reflected light from the front side, the image showed in addition an undeviated central line of much less opacity than the deviated ones. This line may be due to high velocity hydrogen molecules from the discharge tube, and is receiving further investigation. Preliminary calculations point to a probable value of one Bohr magneton as the magnetic moment of the hydrogen atom.

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE FALL MEETING OF THE EXECUTIVE COMMITTEE

THE regular fall meeting of the executive committee of the council of the American Association was held on Sunday, October 17, at the Pennsylvania Hotel, in Philadelphia. The forenoon session was from 10:15 to 1:30, the afternoon session from 3:00 to 6:00, and the evening session from 8:30 to 10:10. The chairman of the committee, Dr. J. McK. Cattell, presided at all sessions. Other members who took part were Doctors H. L. Fairchild, W. J. Humphreys, Vernon Kellogg, B. E. Livingston, W. A. Noyes, H. B. Ward and E. B. Wilson. President L. H. Bailey, retiring president M. I. Pupin, and Dr. F. R. Moulton were unavoidably absent from all sessions and Doctor Kellogg was obliged to leave in the late afternoon. By invitation, Dr. Rodney H. True, secretary of the Committee of One Hundred on Scientific Research, took part in the afternoon session. Dr. C. E. McClung, chairman of the local committee for the fifth Philadelphia meeting, took part in the evening session, also by invitation. Eight members of the committee and Dr. McClung dined together at the Normandie Hotel, at the regular executive committee dinner.

The following matters received attention:

1. The permanent secretary reported that the income for the year just ended exceeds the expenditures and liabilities by over $4,800, which is specially interesting in comparison with considerable deficits for the last three years. These deficits were due primarily to inadequacy in the locally raised funds for the annual meetings and they were cared for by the permanent secretary's general reserves. These reserves are increased this year and amount to over $6,000.

2. It was voted that from the permanent secretary's funds available for appropriation there be set aside $5,000 as an *emergency fund,* to be expended only on action of the council or executive committee. It is intended that this fund shall be generally maintained, being subsequently made up whenever drawn upon for special needs, as in case of an annual deficit. The new emergency fund corresponds to the item recently shown in the permanent secretary's annual reports as "emergency fund," but this item is now rendered official and its amount is fixed at $5,000. After setting aside $5,000 in this way, the permanent secretary's funds (September 30, 1926) comprise:

Publication fund (for publishing Proceedings volume in 1929)	$1,482.41
Emergency fund	5,000.00
Unexpended balance of special fund for Committee on Place of Science in Education (from Commonwealth Fund, of New York)	848.93
Unexpended balance of appropriation for Committee on Annual Exhibition	250.00
Balance, available for expenditure	1,290.95

From the available funds of the permanent secretary, appropriations were made by the executive committee, at the meeting now reported, amounting to $600, as shown farther on.

3. It was voted that each section secretary be asked to present an approximate budget of his section expenses each fiscal year, these budgets to be considered generally at the fall meeting of the executive committee, or at the annual meeting in December.

4. It was voted that the Section Committee of Section K (Social and Economic Sciences) be authorized to expend, for section expenses in connection with the approaching Philadelphia meeting, $150 or such part thereof as may be needed, in addition to the regular allowance to every section secretary, of mile-

[3] J. B. Taylor, *Phys. Rev.*, September, 1926.